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KOLYVAS, S., KOSTAGIOLAS, P. and MARTZOUKOU, K.

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The impact of information needs satisfaction on the creativity of visual art teachers

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The impact of information needs satisfaction on the creativity of visual art teachers

Abstract

Purpose – The aim of this study is to investigate how the information needs satisfaction of visual art teachers affects their creativity. Visual art teachers' information seeking behaviour and specifically the association of information needs satisfaction with creativity has been an understudied area, despite competent information seeking being considered essential for high quality practices of art teachers.

Design/methodology/approach – A questionnaire survey was developed addressing the information seeking behaviour of art teachers, informed by Wilson's model (1981), including visual art teachers' information needs, information resources, obstacles faced while seeking information and the perceived impact of information needs satisfaction on visual art teachers' creativity.

Findings – The study included 298 visual art teachers in Greece. The results demonstrated that the key information needs of art teachers were mainly related to materials' properties, techniques for creating artwork, and artwork promotion methods. Online information sources were the preferred sources of art information, followed by colleagues, personal collections, and visits to galleries and museums Our study identified lack of time, lack of specialized libraries, and copyright, as the main barriers to information seeking.

Originality/value – Information about art plays a substantial role in visual art education, while visual art teachers' information needs satisfaction positively influences their creative endeavours. There is a need to further explore the digital information needs of visual art teachers.

Keywords Visual art teachers, information-seeking behaviour, Wilson's model, information needs, information resources, information barriers, creativity, survey.

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Introduction

Over the last decades, the use of online information technologies has changed the information practices of visual art teachers (Wright, 2016). While the internet provides visual art teachers with a wide range of resources, in order to fulfil their creative and educational information needs, the abundance of unreliable or low-quality online information (e.g., providing shallow knowledge, misinformation, low-quality artwork or inaccurate artist details) has intensified information overload, confusion and uncertainty (Bawden and Robinson, 2009). Research highlights the need to develop information literacy skills that are important for effective online information seeking practices (Munster et al., 2018; Krtalic and Dinnen, 2022) and for achieving educational and creative endeavours overall (Challener, 1999; Daniels, 2018; Zreic et al., 2021).

Art information plays an important role in the creativity of visual artists (Beaudoin and Brady, 2011; Frank, 1999; Hemmig, 2008, 2009; Kratalic and Dinnen, 2022), while visual art teachers require good quality information for various purposes to satisfy their creative and multidimensional role as educators. For example, their information needs might include art creation techniques, material properties, digital visual editing software (such as Illustrator and Photoshop), current art exhibitions and museums, grants, and scholarships, as well as methods to promote their work and share their ideas and experiences. They may also seek information to teach their students about new forms of visual art (such as digital art and animation), to enrich their learning and teaching practices with digital artifacts (e.g., digital photographs of famous works of art) or to enhance their teaching materials with information on inquiry-based and collaborative learning, involving their students in art projects in class (Marner, 2023; Sang 2009). To meet these needs, visual art teachers can turn to one or a combination of information sources, such as online search engines (e.g., Google), art gallery websites, digital art magazines (e.g., Art News, Aesthetica, The Art Newspaper), online social networks (e.g., Facebook, LinkedIn), or offline sources such as other colleagues or librarians.

Several authors, including Bates (2001) and Hemmig (2008), have summarized research on visual artists' information seeking behaviour. Existing research highlights the usefulness of online information for the creativity of visual artists (Larkin, 2010; Lee and Haddow, 2017; Mason and Robinson, 2011), considering it to be a powerful source of art information. Kundu's (2015) research highlights the usefulness of online information to art teachers. Sang (2009) found that the internet allowed visual art teachers to share information and expand their access to new art resources. Research on how artists seek information conducted by Cobbledick (1996), Hemmig (2008, 2009), Gericke and Zijl (2002), and Kautonen (2015) also revealed a relationship between information seeking and artistic creativity. The importance of digital competences and information literacy skills of visual art teachers, have been noted by Greer (2015), Nicholas et al. (2010) and Zhao et al. (2018). In addition, Cordell (2013) emphasized that digital literacy is essential for accessing reliable online resources efficiently and effectively; while information literacy provides the evaluation skills needed to assess quality art information.

This study examines a rather under researched area in the domain of visual art teachers' information seeking behaviour, specifically exploring the impact of information needs satisfaction on creative endeavours, in view of the diversity of visual art teachers' information needs, the information resources they use and the obstacles they encounter while seeking information.

Literature review

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Previous information seeking empirical research in the domain of visual art, has focused on different user groups, including visual art students' information needs for materials, techniques and trends (Daniel, 2018) as well as the information needs of visual artists (Lorenzen, 2004; Lee and Haddow, 2017). For example, Lorenzen, 2004 found that visual artists need information for understanding the art creation process, the latest techniques and experiences of other artists from galleries, exhibitions, and museums as well for keeping up with trends related to using the internet for promoting their art, sharing ideas with other artists through online groups, interacting with online galleries and museums, and showcasing their art online. Visual artists access to online information allows them to participate in the artistic process globally and share their ideas and artworks with other artists, regardless of their cultural background (Lorenzen, 2004). However, factors such as cost of access to resources and lack of information literacy skills can influence the information seeking behaviour of emerging professional artists (Mason and Robinson, 2011; Treat and Judkins, 2018).

Research with visual art teachers has found that art faculty members need specialized art libraries for their scholarly work and teaching (Gregory, 2007), while different socio-demographic characteristics (such as gender, age, qualifications, institution, working environment, artistic disciplines, field of instruction/ interest) significantly influence information needs and information seeking behavior (Gericke and Zijl's, 2002). In addition, although dynamic changes in technology have affected information seeking behaviour in the visual arts (Larkin, 2010; Lee and Haddow, 2017; Gregory, 2007), access to digital content for visual art teachers is hampered by technology and language barriers (Robinson, 2014; Usak, 2011). Interestingly, the library is still recognized as a key place to search for information (Daniels, 2018; Krtalic and Dinnen, 2022; Mason and Robinson, 2011; Usak, 2011) but certain barriers exist, including lack of experience using libraries, difficulty in navigating indexes, and lack of time.

Although there is some informative research on the sources of information that visual art teachers use, more empirical research is required to understand the impact of information needs' satisfaction on the creativity of visual art teachers. Borrowing a constructivist approach from social learning theory, via the lenses of traditional constructive theoretical approaches represented by seminal theorists such as Piaget (1968) and Vygotski (1978), human artistic activities can be interpreted as "constructivism" socially situated phenomena, where an artist, similarly to a learner, "constructs" their own knowledge from interacting with past information, experiences and other artists. In constructive approaches within classroom practice, learning is an active process of acquiring new knowledge and creating understanding, which relates both to the learner's prior experiences, the collaborative, social learning environment in which learning takes place and existing meaning systems and knowledge domains. Following that line of enquiry, artists' creativity can be interpreted as the outcome of acquiring information and building knowledge structures that allow to create new, alternative or individual artistic creations, beyond just a "slippery concept that can be described as an ability to create something from nothing" (Liggett, Townsley & Earnshaw, 2023, p. vii). Creativity is not only based on individual attributes and creative capacity but on a wide variety of factors that include, among others, the context in which the work is produced, the social and cultural factors at the time the artwork is produced, and previous art traditions (Combrich, 2007). These determine how novel interpretations of existing artistic works are made (for example, based on material and practical techniques or the aesthetic principles of specific art movements), making connections with previous works of art, and understanding theoretical approaches, artistic ideas, emotions, values, and meanings that represent the wider socio-cultural and political context. Creativity is also made possible based on cultural and social context conditions, for example ones that promote education and learning as an "fundamental external factor that influences creativity" (KEA European Affairs, p.7).

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Previous research has explored the role of information and education in creativity (Amabile, 1988) and the ways in which it can be enhanced by means of recognizing and satisfying information needs, highlighting how information behaviour influences that process. Although creativity has been linked to different individual and contextual characteristics (such as talent, education, cognitive skills, interest patterns, personality dispositions, and work motivation, which distinguish creative from non-creative individuals) (Amabile, 2001), the role of recognizing information needs and using information sources forms an important component of the process, as it becomes the means for individuals to acquire knowledge and technical skills within the domain of their practice (Amabile, 1996). When planning a new artistic work, identifying the creative task or problem, generating, evaluating and selecting information to accomplish the creative output become key stages of the creative process. These represent the "domain-relevant" dimension, which together with creativity relevant skills of the artist and work motivation form three key parts of the artistic activity (Amabile, 1983). As creative artists engage in information seeking to expand and transform their existing information and knowledge domains, examining the process of effectively sourcing, evaluating and selecting information sources to satisfy information needs in the creative process presents interesting lines of empirical research enquiry.

However, little knowledge currently exists on the impact of information needs satisfaction related to different artistic goals or in different fields of visual art, where "purposive seeking for information" takes place "as a consequence of a need to satisfy a goal" (Wilson, 2000) for artistic outcomes. User satisfaction studies in information related environments typically present an information system centered view with an emphasis on preferred information sources, use satisfaction and improved system design, rather than on the individual's overall information needs satisfaction which may reveal information-seeking satisfaction gaps. Following a user-based view of the concept of user satisfaction, and turning to the perceived levels of satisfying a need for the creative goal rather than a search system "analysed according to systems features and variables", presents a more holistic study of users from the viewpoint of users (Talja & Hartel, 2007) that follows an established user-centred paradigm in information science research (Dervin and Nilan, 1986; Vakkari, 1997). According to Hemming, for example, the information needs of creative artists may demonstrate "idiosyncratic" information use with preference for personal collections and a "dissatisfaction that drives the perpetual need for fresh sources of information", making a call for information providers to "comprehend both the need and the limitless range of possible sources, and to find creative ways to bring the artists and the sources together" (Hemming, 2009).

This research therefore addresses current research gaps by focusing not only on the information seeking preferences of visual art teachers (including their information needs, the resources they employ to find information, and the obstacles they encounter when they seek visual art information) but also on their information needs satisfaction and the role this plays on their creativity overall.

Research Aim

The aim of this research was to first explore visual art teachers' information seeking profiles by means of a) capturing their most frequent information needs, b) identifying the most frequently information sources they employed, and c) investigating the most important obstacles they encountered during information seeking. This was followed by a study of visual art teachers' self-perceived impact of information needs satisfaction on their creativity.

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Methodology: theoretical framework

This study was grounded on Wilson's macro model of information seeking (Wilson, 1981) which was adapted through an exploratory review of the literature for the context of visual art teachers as shown in Figure 1. Wilson (1981; 2000) argues that the motivation for information seeking arises from a person's social/professional role, which in this context is the visual art environment. Personal and contextual factors have an impact on the way in which individuals both search for and use information (Bawden and Robinson, 2013; Beghetto and Kaufman, 2007).

{Please place Figure. 1 about here}

In the context of this study, information needs were studied as generated with the purpose of satisfying the creative and multidimensional roles of visual art teachers as educators whose information needs may include art creation techniques, material properties, digital visual editing software (such as Illustrator and Photoshop), current art exhibitions and museums, grants, and scholarships, as well as methods to promote their work and share their ideas and experiences. To meet these needs, visual art teachers can turn to one or a combination of information sources, such as online search engines (e.g., Google), art gallery websites, digital art magazines (e.g., Art News, Aesthetica, The Art Newspaper), online social networks (e.g., Facebook, LinkedIn), or offline sources such as librarians, other colleagues (visual art teacher) or friends.

In the information seeking process visual art teachers encounter different personal and environmental barriers (such as lack of information literacy skills and familiarity with digital indexes and databases, distrust towards digital information, and limited access to certain sources of information due to factors such as cost, copyright, or lack of specialized libraries for visual art). For example, Stam (1995) described visual artists as compulsive browsers and identified obstacles such as difficulty in using indexes and lack of time. By reducing barriers, such as developing information literacy skills, art teachers can better assess the validity of art information and reduce potential risks (Robinson, 2014).

Survey design and questionnaire development

This study was conducted by means of a questionnaire survey that was informed by Wilson's model (1981) and adapted to capture visual art teachers' information seeking behaviour, the obstacles they encounter and their self-perceived importance of the impact of information needs satisfaction imposes on creativity in different fields of visual art (Table 1). The purpose of the survey was not to further adapt the different model dimensions, but to offer empirical evidence around the information needs, information sources and barriers that visual art teachers encountered and explore the impact of information needs satisfaction on their educational creative practices.

{Please place Table 1. About here}

The measurement scale employed followed a five-point Likert type scale to assess the frequency of information needs (12 items), the frequency of use of information resources (27 items), the importance of barriers involved in seeking information (9 items), and the impact of information needs satisfaction on various aspects of visual art teachers' creativity (12 items). The scale ranged from 1 "not at all" to 5 "very much". The survey design was approved by the Research Ethics and Deontology Committee of the University the researchers were affiliated

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with. The visual art teachers participated in the survey on a voluntary basis after agreeing on its content and purpose. The questionnaire was administered using Google Forms.

Pilot testing and validity

A qualitative pilot study for the content validity of the questionnaire was conducted by eight (8) experts (scientists and established visual artists) to identify any ambiguities, to receive feedback, and make improvements. Participants were briefed on the purpose of the survey and provided their comments for the questionnaire. After careful consideration of the experts' comments, the questionnaire was given its final format. To assess the reliability of the questionnaire, Cronbach's alpha was used. The results showed that all item groups in the questionnaire had a Cronbach's alpha index much higher than 0.7: 0.913 for the information needs of visual art teachers, 0.936 for information sources, and 0.779 for the barriers visual art teachers face when seeking visual art information.

Data analysis process

The SPSS version 22.0 statistical package was used for statistical analysis to investigate whether the distribution of demographic data affects the information behaviour of visual art teachers. The results of Kolmogorov-Smirnov and Shapiro-Wilk normality tests further showed that all the variables examined did not follow the normal distribution (p values for all normality tests < 0.001). Therefore, nonparametric Mann-Whitney U-test was used to assess significant differences between two independent subgroups, and Kruskal-Wallis H-test of one-way analysis of variance by ranks was used to assess differences between more than two independent subgroups (these are listed in the appendix and discussed in the results section). Principal components analysis (PCA) with the varimax orthogonal rotation method was used to identify groups of specific information needs, sources, and barriers. We considered Kaiser's criterion with factors reaching eigenvalue 1 as a factor extraction method. The results of Bartlett's sphericity test at $p < 0.05$ and the Kaiser Meyer–Olkin (value of 0.6 or above) confirmed the suitability of our dataset for structure detection. Bivariate correlation statistics between all clustered variables reported the statistical associations between the different items of the research instrument. The questionnaire was distributed exclusively among the members of the Association of Visual Art Teachers in Greece. It aims to bring together art teachers with the aim to promote art related education for the development of artistic literacy, visual art teaching methods, aesthetic education. It also supports the artistic work of its members, opening the paths of art to all, including students and tomorrow's citizens. Membership includes approximately 2000 visual art teachers, appointed in primary and secondary formal school education in Greece (Association of Visual Art Teachers, 2024).

The survey took place over a three-month period from July to October 2022 and a total of 298 visual art teachers participated by completing the questionnaire.

{Please place Table 2. About here}

Results

The majority of the participants were female (71.1%, n=212), born between 1965-1980 (Generation X) (62.1%, n=185), with a university undergraduate degree (68.5%, n=204) and had semi-professional visual artist roles (44%, n=131) (Table 2).

Appendix A. summarizes descriptive statistics in all the survey items using frequencies and median values. Moreover, subgroup test statistics for all demographic variables are reported through Mann–Whitney U test and Kruskal-Wallis H test. It is worth noting that although in the Appendix the significant sub-group statistics are identified in the tables of results as

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superscripts, only some of the statistical differences between the different demographic categories are further mentioned here.

In Appendix Table A1 visual art teachers reported the following information needs as more frequent: photographs (median=4), material properties (median=4), art creation techniques (median=3), digital methods for promoting and presenting artworks (median=3), current visual art exhibitions (median=3), and professional development (median=3). In Table A2 of the Appendix, it is demonstrated that online search engines, such as Google and personal digital libraries were used more frequently than other sources of information (median=4). Visiting museums, consulting with colleagues who are also visual artists, and using their own personal library or printed collection were additional popular methods (median=4). However, teachers were less likely to rely on public/municipal libraries, national libraries, scientific databases, virtual art communities, Twitter, and LinkedIn (Median=2 or =1). Evidently, female visual art teachers tended to visit art galleries more often compared to their male counterparts (mean rank values of 157.25 and 130.38, respectively) and employed professional organizations such as the Chamber of Fine Arts more frequently than male teachers (mean rank values of 157.17 and 130.58, respectively). Moreover, younger visual art teachers tended to use more often digital art magazines (mean rank of 273.00, compared to 174.96 for older teachers), as well as art catalogues of visual artists' exhibitions (mean rank of 185.50, compared to 144.14 for older teachers), and Instagram (mean rank of 217.50, compared to 117.75 for older teachers). Visual art teachers with fewer years of experience (5-10) preferred to seek information more frequently in digital art communities than other visual art teachers (21-50 years of experience), with a mean ranking of 162.58 versus 122.13, respectively. Visual art teachers with fewer years of experience visited art galleries more often than others. Visual art teachers with 1-4 years of experience used Instagram more often than teachers with 21-50 years (i.e., $p < 0.05$, with mean rank 161.4 vs 122.18). Those who identified as professionals and actively created visual art tended to visit galleries more often, with an average rank of 171.02. By comparison, semi-professionals had a mean rank of 145.89 and amateurs a mean rank of 129.95. Similarly, professional visual art teachers participated and attended conferences more often than semi-professionals and amateurs (with an average rank of 168.94, compared to 139.96 and 142.67, respectively). Professional visual art teachers tended to seek information more often in virtual art communities, with an average rank of 174.73. By comparison, semi-professionals had an average rank of 133.85, while amateurs had an average rank of 146.26.

Appendix Table A3, presents the range of obstacles that visual art teachers encountered when seeking information. The most significant barriers reported were the absence of specialized visual art libraries (median=3), lack of time (median=3), and copyright (median=3). Specifically, female visual art teachers were found to encounter more barriers due to a “lack of time” than males (i.e., $p < 0.05$, with mean rank 155.77 vs 134.04, respectively). Visual art teachers who began their careers from 1981 to 1996 faced more time constraints than their older counterparts who began teaching from 1965 to 1980 (mean rank of 171.62 compared to 145.95). In addition, younger visual art teachers (1981 to present) faced difficulties in accessing specialized visual art libraries, which were more readily available to older teachers, who began teaching between 1965 and 1980 (mean rank of 171.62 and 139.85 respectively). Finally, visual art teachers who declared themselves professionals regarding their involvement in the production of visual artwork identified the lack of availability of reliable sources of information (mean rank of 165.58) as a more frequently encountered barrier, when compared to semi-professionals (mean rank of 137.97) and amateurs (mean rank of 150.12).

Visual art teachers stated that they are satisfied with the overall information needs (median 3) in Table 3.

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{Please place Table 3. About here}

Appendix Table A4, demonstrates that information needs satisfaction of visual art teachers affected almost all the different areas of creativity considered in the study: visual art education (median 4), photography (median 4), digital art (video art, animation, cinema, etc.) (median 4), history of art (median 4), sculpture (median, 3), engraving (median, 3), scenography (median, 3), mosaic (median, 3), ceramics (median, 3) and decoration (median, 3). There was only a single area, Hagiography, that had a lower value (median 2).

Furthermore, the results of the Exploratory Factor Analysis (EFA) revealed two categories (factors) of information needs that collectively explained 65.42% of the total variance (Table 4). The two factors capture the perceived influence of professional development (nine items, Cronbach's alpha: 0.911) and creation techniques and materials (three items, Cronbach's alpha: 0.845). Table 4 presents the descriptive statistics (mean values and standard deviation) for these factors. Therefore, teacher visual artists attached more importance to the group of information needs related to the impact of visual art creation techniques and materials (mean=3.33) than to the information needs related to professional development (mean=2.97).

{Please place Table 4. About here}

The frequencies of information sources were grouped into seven factors, explaining 70.38% of the total variation (Table 5). The seven factors semantically captured different types of information sources, namely "Digital art sites" (five items, Cronbach's alpha: 0.843) "Conventional sources (galleries, museums)" (five items, Cronbach's alpha: 0.874), "Professional scholar sources" (two items, Cronbach's alpha: 0.875), "Libraries" (three items, Cronbach's alpha: 0.838), "Informal information on the Internet" (four items, Cronbach's alpha: 0.694), "Professional social networks scholars" (two items, Cronbach's alpha: 0.828) and "Personal colleagues collection" (three items, Cronbach's alpha: 0.714). Descriptive statistics of grouped variables for information sources showed that personal collections/colleagues dominated as the main sources of information (mean=3.65), while informal online information (Mean=3.35) was also used quite frequently by the visual art teachers who participated in our survey.

{Please place Table 5. About here}

Barriers to information seeking behaviour related to visual art teachers were grouped into two components, explaining 57.39% of the total variance. The EFA is presented in Table 6, with the two factors named "Environment" (5 items, Cronbach's alpha: 0.772) and "Personal information literacy skills" (4 items, Cronbach's alpha: 0.790). The results demonstrate that respondents gave equal importance to both groups of information seeking barriers.

{Please place Table 6. About here}

The impact of information needs satisfaction on the individual forms/fields of visual creativity was grouped into two components, explaining 66.668% of the total variance. EFA is presented in Table 7, with the two factors tentatively named "Fine arts" (7 items, Cronbach's alpha: 0.884) and "Applied arts" (5 items, Cronbach's alpha: 0.900).

{Please place Table 7. About here}

Table 8 includes the pairwise Spearman's rho correlation coefficients of the factors developed through EFA groupings, and the factors developed through EFA grouping of the creative employment domains of visual art teachers. Because the factors do not follow the normal distribution, which was tested by the Kolmogorov-Smirnov test that resulted in values $p < 0.05$, Spearman's rho test was chosen. We observe that the impact of information on the creative

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activities (applied arts) of visual art teachers is positively associated to the frequency of information needs associated with professional development (r = 0.197**) and techniques and materials for the creation of visual artworks (r = 0.170**). The use of digital art websites is positively related to the frequency attached to information needs related to professional development (r = 0.431**). and techniques and materials for creating works of art (r = 0.387**). Professional scholar sources are positively related to the frequency of information needs about professional development (r = 0.421**) for visual art teachers. Another characteristic is that the frequency of informal use of information on the Internet is positively related to barriers in the environment of visual art teachers (r = 0.221**), such as lack of time. It also appears that interpersonal resources as expressed by the EFA grouping variable colleagues/personal collections play an important role in the search for information related to creative techniques (r = 0.459**) and professional development (r = 0.435**). The frequency of using conventional sources of information such as art galleries and museums to search for information correlates positively with the importance that visual artists' teachers attach to the techniques and materials (r = 0.324**) used to create artworks and their professional development (r = 0.454**). Therefore, we can conclude that visual art teachers visit art galleries in search of information to promote and exhibit their artworks.

{Please place Table 8. About here}

Discussion

Through the literature review, it was found that there is a lack of research on how information affects creativity of visual art teachers (Munster et al., 2018; Krtalic and Dinnen, 2022). This study therefore aimed to additionally investigate the impact of meeting information needs on the creativity of visual art teachers. Our findings showed that visual art teachers attribute their information needs (e.g., searching for photographs, finding information about materials and their properties, artmaking techniques, etc.) to their creativity. This is consistent with other studies showing that visual artists need information to be creative (Beaudoin and Brady, 2011; Cobledick, 1996; Hemmig, 2008; Krtalic and Dinnen, 2022). However, the information related to material properties and techniques for creating visual artworks prevailed in importance, which means that visual art teachers needed to be informed about the techniques and properties of materials to be better able to cope with the challenges of their work. This finding adds more empirical evidence to earlier research that similarly found that visual art teachers need information about visual art techniques and the properties of contemporary visual art materials (Lorenzen, 2004).

Previous research has found that visual art teachers in the teaching process mainly make use of resources containing digitised artworks (e.g., Google Arts & Culture), virtual museum environments or galleries (Gerlich & Perrier, 2003; Kolyvas & Nikiforos, 2023; Ngan, Lee & Koo, 2003). They also use interactive digital environments that positively influence their students' creative expression (Roland, 2010; Schrum & Levin, 2009; Tillander, 2011).

The present study found that online search engines (e.g., Google) were the preferred source of information for visual art teachers, followed by colleagues, personal collections, and visits to look for information in galleries and museums. This is also consistent with other studies (Frank, 1999; Layne, 1994; Robinson, 2014) stating that visual artists, when searching and collecting information prefer Internet search engines, such as Google, to library electronic systems because they find them quite technologically complex.

Moving one step further, our results capture the impact of information needs satisfaction of visual art teachers on their creativity, in the same vein as Layne (1994) and Robinson (2014)

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for visual artists and Frank (1999) for art school students. As shown in previous research by Kundu, 2015; Larkin (2010), Lee and Haddow (2017), Gregory (2007) and Sang (2009) dynamic, changes in technology have influenced the information seeking behaviour of visual artists. This was also the case in this study, where there was preference for digital search sources and limited visits to libraries due to lack of time (Larkin, 2010; Lee and Haddow, 2017; Gregory, 2007). The findings also showed that the use of social media, such as blogs and Instagram enhanced the creativity of visual art teachers, which coincides with and further validates previous qualitative research by Budge's (2013) on a community of visual artists, where creativity is significantly enhanced by the use of social media tools such as blogs, Twitter, and Instagram.

In terms of the main barriers to information seeking by visual art teachers, our study identified environmental barriers (i.e., lack of time, lack of specialized libraries, and copyright) to meeting their information needs, which is consistent with existing studies (Frank, 1999; Layne, 1994; Robinson, 2014). However, the present study showed fewer barriers related to participants' characteristics, such as language, information literacy, and lack of confidence in digital resources, which have been prominent in previous research (manifested as barriers related to foreign language, computer literacy, and information literacy skills) (Robinson, 2014; Usak, 2011). This could be explained by the high level of education of the participants who all held a university degree and almost a third (31.5%) a master's or doctoral degree.

Interestingly, there was preference towards informal exchange of interpersonal information, that is, exchanges of information with other visual art colleagues, teachers and friends. This observation has also been confirmed in previous studies (Cobbledick, 1996; Hemmig, 2009) and can be attributed to increased levels of trust in this study between colleagues and friends/members of the Association of Visual art Teachers and the Greek Chamber of Fine Arts. For example, when faced with a problem either related to their teaching practices or creative techniques, visual art teachers often discuss it with fellow visual art teachers who face the same or similar problems.

The study results highlight the primary role of information in the creativity of visual art teachers. Our study revealed that information need satisfaction contributes to the creativity of visual art teachers which is in par with previous research (Gregory, 2007; Lee & Haddow, 2017). It is therefore important to raise policymakers' awareness for investing art libraries and other information services within the educational ecosystem. In addition, librarians should update art collections, and introduce actions such as briefings, workshops, and information literacy programs that could aim to meet the information needs of visual art teachers. Visual art teachers should receive further expert advice on finding up-to-date, reliable, and 'safe' information sources, such as high-quality digital images, specially designed printed materials, and/or online visual art teachers' networks. Every effort should be made to turn libraries into 'learning communities' and attract visual art teachers. Visual arts teachers' associations and interest groups could further contribute by means of organizing visits to museums and other places of cultural interest as well as more generally promoting art and visual art creativity. This may take the form of seminars addressed to visual arts teachers with suggestions regarding ways of using, evaluating, and utilizing digital information sources (e.g., using information guides, exploring copyright, etc.). This can also extend to the creation and publication of educational material and guides suitable for visual arts teachers and students that explain methods of searching and utilizing information.

The present study reviewed and adopted Wilson's (1981) model to provide an effective theoretical framework for studying the information-seeking behaviour of visual art teachers. Visual art teachers' information seeking is related to their creative profession and is guided by

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specific motivations related to the work context. However, several intervening variables present themselves as barriers to this process. These included the lack of specialized visual art libraries, lack of time, copyright, cost of access to resources, and lack of availability of authoritative visual art information sources; these may act as either barriers or as reinforcing factors (when reversed) in the information seeking process (Kostagiolas et al., 2013).

It is important to note that our survey results should be generalized with caution. The survey limitations include that the survey was conducted exclusively among Greek visual art teachers working in the Greek education system and that a convenience sampling method was followed, involving a snowball approach. Perhaps a larger and international scale survey could provide additional evidence on the important role of satisfying information needs in fostering creativity among visual art teachers across Europe or internationally.

Conclusion

The search for information on visual art has a strong (direct and/or indirect) impact on improving the creativity of visual art teachers. This evolving research path requires an on-going consideration of the design, the collection process and the careful selection of elements of interest (objectivity, accessibility, etc.) that form the basis of the study. Investigating the behaviour of visual art teachers seeking information for creativity is critical to enriching our knowledge about the impact of information on creativity overall (Lee and Haddow, 2017; Ihadiadene and Riviera, 2021). To improve future research in this area, it is important to go beyond simply describing information needs and sources to focusing on information-seeking behaviour models that have practical applications in real-life situations, of which Wilson's (1981) model is a good example. As Wilson (2010) notes, research in this area should ultimately produce ideas that help people navigate the information landscape more effectively. Visual art information-seeking research could therefore focus on exploring more specifically the information needs of visual art teachers in practice, for example how an art teacher can use information to improve students' abilities to think synthetically and analytically and enhance their critical thinking skills by incorporating reflective processes into the classroom. A teacher could require information of different nature and scope to present an image of a work of art collected from various sources, both formal and informal, such as different websites (e.g., Google Arts & Culture), digital art magazines (such as Art News and Aesthetica), databases, conferences, and fellow visual artists. This approach would help students to decode the artwork and better understand the culture in which it was created (Fowler, 1996: 55). Research shows that satisfying information needs is crucial for effective day-to-day management of creativity among visual art teachers (Budje, 2013; Krtalic and Dinnen, 2022; Kundu, 2015). Colleagues are a valuable source of information, as they can share their knowledge, discuss issues related to creativity and teaching, and offer help. In addition, well-informed visual artists can make better decisions about their educational practices. Therefore, the satisfaction of information needs of visual art teachers supports their work and enhances their effectiveness. The present study, therefore, confirmed the following:

(1) It is crucial for visual art teachers to have access to relevant visual art information to enhance their creativity.

(2) Regular information from various sources is necessary for visual art teachers to address educational challenges and improve their educational practices.

(3) Digital resources such as digital art websites, social networks, and informal information resources over the internet are employed by visual art educators to seek information related to their creative endeavors.

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(4) The internet is used extensively by visual art teachers, and although it can be a valuable resource, at the same time, it can be a barrier.

The study highlighted that visual art teachers exhibit diverse information behaviour. Further research is required to identify the specific components of their behavior that can contribute to their educational practices. Meeting the information needs of visual art teachers has a positive impact on their creativity. This study is among the first to shed light on how satisfying information needs can influence creative practices in this context. However, additional studies are needed to validate and expand these findings, in order to gain a better understanding of how visual art teachers seek information.

References

Amabile, T. M. (2001), "Beyond talent: John Irving and the passionate craft of creativity". *American psychologist*, Vol. 56 No. 4, pp. 333, doi: https://doi.org/10.1037/0003-066X.56.4.333

Amabile, T. M. (1996). "Creativity in context: Update to the social psychology of creativity". Boulder, CO: Westview Press.

Amabile, T. M. (1988), "A model of creativity and innovation in organizations", *Research in Organizational Behavior*, Vol. 10 No 1, pp. 123-167, available at: https://web.mit.edu/curhan/www/docs/Articles/15341_Readings/Group_Performance/Amabile_A_Model_of_CreativityOrg.Beh_v10_pp123-167.pdf (accessed 12 May 2023).

Amabile, T. M. (1983). "The social psychology of creativity: A componential conceptualization". *Journal of personality and social psychology*, Vol. 45 No. 2, pp. 357, doi: 10.1037/0022-3514.45.2.357 (accessed 12 May 2023).

Ashford J (2001). *The Arts and Crafts Computer: Using Your Computer as an Artist's Tool.* Berkeley, CA: Peachpit Press

Association of Visual Art Teachers, 2024. https://www.art-teachers.com/i-enosi/

Atkin, C. (1973). Instrumental utilities and information seeking. In P. Clarke, *New models for mass communication research.* Sage. https://psycnet.apa.org/record/1974-32376-001 (accessed 12 May 2023).

Bates, M. J. (2001), "Information needs and seeking of scholars and artists in relation to multimedia materials", available at: https://pages.gseis.ucla.edu/faculty/bates/scholars.html (accessed 12 May 2023).

Batey, M. (2012), "The measurement of creativity: From definitional consensus to the introduction of a new heuristic framework" *Creativity Research Journal*, Vol. 24 No.1, pp. 55-65, doi: https://doi.org/10.1080/10400419.2012.649181

Bawden, D. (2006), "Users, user studies and human information behaviour: A three-decade perspective on Tom Wilson's "On user studies and information needs" ", *Journal of Documentation*, Vol. 62 No. 6, pp. 671-679, doi: https://doi.org/10.1108/00220410610714903 (accessed 12 May 2023).

Bawden, D., & Robinson, L. (2009), "The dark side of information: overload, anxiety and other paradoxes and pathologies", *Journal of Information Science,* Vol 35 No. 2, pp. 180-191, doi: https://doi.org/10.1177/0165551508095781 (accessed 4 June 2023).

Bawden, D., & Robinson, L. (2013), "No such thing as society? On the individuality of information behavior", *Journal of the American Society for Information Science and Technology*, Vol. 64 No.12, pp. 2587-2590, doi: https://doi.org/10.1002/asi.22971(accessed 4 June 2023).

Journal of Documentation

Beaudoin, J. E. and Brady, J. E. (2011), "Finding visual information: a study of image resources used by archaeologists, architects, art historians, and artists", *Art Documentation: Journal of the Art Libraries Society of North America*, Vol. 30 No. 2, pp. 24-36, doi: https://www.journals.uchicago.edu/doi/abs/10.1086/adx.30.2.41244062 (accessed 12 May 2023).

Beaudoin, J. E. (2014), "A framework of image use among archaeologists, architects, art historians and artists", *Journal of Documentation,* Vol. 70 No. 1, pp. 119-147, doi: https://doi.org/10.1108/JD-12-2012-0157 (accessed 12 May 2023).

Beghetto, R. A. and Kaufman, J. C. (2007), "Toward a broader conception of creativity: A case for" mini-c" creativity", *Psychology of Aesthetics, Creativity, and the Arts*, Vol.1 No. 2, pp. 73, doi: https://doi.org/10.1037/1931-3896.1.2.73 (accessed 12 May 2023).

Budge, K. (2013), "Virtual studio practices: Visual artists, social media and creativity", *Journal of Science and Technology of the Arts,* Vol. 5 No. 1, pp. 15-23, available at: https://vuir.vu.edu.au/40528/6/84-Article%20Text-334-2-10-20131223.pdf (accessed 12 May 2023).

Case, D. O. & Given, L. M. (2016). *Looking for information: A survey of research on information seeking, needs, and behavior*. Emerald Group Publishing Limited, United Kingdom, UK, available at: https://books.google.gr/books?hl=el&lr=&id=IAYvDAAAQBAJ&oi=fnd&pg=PP1&dq=Case,+D.+O.+(2012).+Looking+for+information:+a+survey+of+research+on+information+seeking,+needs+and+behavior.+(3rd.+ed.).+Bingley,+UK:+Emerald+Group+Publishing&ots=Y_RMowlNA7&sig=c1VtRO5K6FX2QjIqm_PUP_CV6lg&redir_esc=y#v=onepage&q&f=false (accessed 12 May 2023).

Challener, J. (1999). "Information-Seeking Behavior of Professors of Art History and Studio Art", available at: https://eric.ed.gov/?id=ED435405 (accessed 12 May 2023).

Cobbledick, S. (1996), "The information-seeking behavior of artists: Exploratory interviews", *The Library Quarterly*, Vol. 66 No. 4, pp. 343-372, doi: https://www.journals.uchicago.edu/doi/abs/10.1086/602909 (accessed 12 May 2023).

Combrich, E.H. (2007). *The Story of Art*. Phaidon Press Ltd., London

Cordell, R. M. (2013), "Information literacy and digital literacy: Competing or complementary?" *Communications in Information Literacy*, Vol. 7 No. 2, pp. 177–183, https://pdxscholar.library.pdx.edu/comminfolit/vol7/iss2/14/ (accessed 4 June 2023).

Dane, W. J. (1987), "Public art libraries and artists and designers: a symbiotic scheme for success", *Art Libraries Journal*, Vol. 12 No. 3, pp. 29-34, doi: https://doi.org/10.1017/S0307472200005277 (accessed 12 May 2023).

Daniels, R. (2018), "Developing a research-led practice: A case study examining the information needs and behaviours of first year undergraduates at the University for the Creative Arts", *Art Libraries Journal*, Vol. 43 No. 3, pp. 143-148, doi: https://doi.org/10.1017/alj.2018.21 (accessed 12 May 2023).

Dervin, B., & Nilan, M. (1986). "Information needs and uses". In M. E. Williams (Ed.), *Annual Review of Information Science and Technology,* Vol. 21, pp. 3-33. White Plains, NY: Knowledge Industry Publications.

Ennis, R. H. (1996). Critical thinking dispositions: Their nature and assessability. *Informal Logic*, Vol. 18 No. 2, pp. 165-182, doi: https://doi.org/10.22329/il.v18i2.2378 (accessed 19 July 2023).

Fowler, C. (1996). *Strong arts, strong schools: The promising potential and shortsighted disregard of the arts in American schooling,* Oxford University Press, USA.

Journal of Documentation

Frank, P. (1999), "Student artists in the library: An investigation of how they use general academic libraries for their creative needs", *The Journal of Academic Librarianship,* Vol. 25 No. 6, pp. 445-455, doi: https://doi.org/10.1016/S0099-1333(99)00077-4 (accessed 12 May 2023).

Gericke, E. M. and Van Zijl, C. (2002), "Information world of visual artists", *South African Journal of Art History*, Vol. 17, pp. 40-53, available at: http://hdl.handle.net/2263/15084 (accessed 12 May 2023).

Gerlich, B. K., & Perrier, A. (2003), "Arts Instruction in the Age of Technology: Providing Library Services to Support Studio and Survey Faculty Who Use Technology for Instruction". *Information Technology and Libraries*, Vol. 22 No 2, pp. 79–83, available at: https://www.proquest.com/openview/3eef2875b8522d8b7984afcee00d24df/1?pq-origsite=gscholar&cbl=37730 (accessed 14 January 2024).

Greer, K. (2015), "Connecting Inspiration with Information: Studio Art Students and Information Literacy Instruction", *Communications in Information Literacy*, Vol. 9 No. 1, pp. 83-94, available at: https://eric.ed.gov/?id=EJ1089283 (accessed 12 May 2023).

Gregory, T. R. (2007), "Under-served or under-surveyed: The information needs of studio art faculty in the southwestern United States" *Art Documentation: Journal of the Art Libraries Society of North America*, Vol. 26 No. 2, pp. 57-66, doi: https://www.journals.uchicago.edu/doi/abs/10.1086/adx.26.2.27949470?journalCode=adx (accessed 12 May 2023).

Hemmig, W. S. (2008), "The information-seeking behavior of visual artists: a literature review", *Journal of Documentation*, Vol. 64 No. 3, pp. 343- 362, doi: https://doi.org/10.1108/00220410810867579 (accessed 12 May 2023).

Hemmig, W. (2009), "An empirical study of the information-seeking behavior of practicing visual artists", *Journal of Documentation,* Vol. 65 No. 4, pp. 682-703, doi: https://doi.org/10.1108/00220410910970302 (accessed 12 May 2023).

Johnson, J.D. and Case, D.O. (2012), *Health Information Seeking (Health Communication),* Peter Lang Publishing, New York, NY.

KEA European Affairs (2019). *The impact of culture on creativity. A Study prepared for the European Commission (Directorate-General for Education and Culture)*, available at: https://keanet.eu/wp-content/uploads/2019/09/impactculturecreativityfull.pdf (accessed 17 January 2024)

Kautonen, H. (2015, August). "Playing Dice with a Digital Library: Analysis of an Artist Using a New Information Resource for Her Art Production". In International Conference on Human-Computer Interaction (pp. 430-440). Springer, Cham, available at: https://link.springer.com/chapter/10.1007/978-3-319-21006-3_41 (accessed 12 May 2023).

Kolyvas, S., & Nikiforos, S. (2023), "Technology and Creativity on early adolescence: A case study during COVID-19 pandemic". *Current Psychology*, Vol. 42 No 10, pp. 8554-8561, doi https://doi.org/10.1037/0022-3514.43.5.997 (accessed 14 January 2024).

Kostagiolas, P.A., Kourouthanassis, P.E., Martzoukou, K., Korfiatis, N. and Niakas, D. (2018), "Information seeking behavioural paths of physicians for diabetes mellitus care: a qualitative comparative analysis of information needs, sources, and barriers", *Health Systems*, Vol. 7 No. 1, pp. 13-28, doi: https://doi.org/10.1080/20476965.2017.1390050 (accessed 12 May 2023).

Kostagiolas, P., Martzoukou, K., Georgantzi, G. and Niakas, D. (2013), "Information seeking behaviour of parents of paediatric patients for clinical decision making: the central role

Journal of Documentation

of information literacy in a participatory setting", *Information Research: An International Electronic Journal,* Vol. 18 No. 3, p. 590.

Krtalić, M., and Dinneen, J. D. (2022), "Information in the personal collections of writers and artists: Practices, challenges and preservation", *Journal of Information Science,* Vol. 0 No. 0, doi: https://doi.org/10.1177/01655515221084613 (accessed 12 May 2023).

Kundu, D. K. (2015), "Nature of the Information Seeking Behaviour of Teachers Engaged in General Degree Colleges and Teachers' Training Colleges: A Critical Analysis", *Athens Journal of Education*, Vol. 2 No.3, pp. 257-273, doi: https://eric.ed.gov/?id=EJ1216501

Larkin, C. (2010), "Looking to the future while learning from the past: information seeking in the visual art", *Art Documentation: Journal of the Art Libraries Society of North America*, Vol. 29 No.1, pp. 49-60, doi: https://www.journals.uchicago.edu/doi/abs/10.1086/adx.29.1.27949539 (accessed 12 May 2023).

Layne, S. S. (1994), "Artists, art historians, and visual art information", *The Reference Librarian,* Vol. 22 No. 47, pp. 23-36, doi: https://doi.org/10.1300/J120v22n47_03 (accessed 12 May 2023).

Lee, H. L. and Haddow, G. (2017). "Artists' information seeking behaviour" available at: http://ifla-test.eprints-hosting.org/id/eprint/2158/ (accessed 12 May 2023).

Liggett, S. Townsley, R. Earnshaw, J. (2023). *Creativity in Art, Design and Technology*. Springer Series on Cultural Computing. Springer, Cham. doi: https://doi.org/10.1007/978-3-031-24869-6_8

Lorenzen, E. A. (2004), "Selecting and acquiring art materials in the academic library: meeting the needs of the studio artist", *The Acquisitions Librarian*, Vol.16 No. 31-32, pp. 27-39, doi: https://doi.org/10.1300/J101v16n31_03 (accessed 12 May 2023).

Marner, A. (2013), "Digital media embedded in Swedish art education–a case study" *Education Inquiry,* Vol. 4 No. 2, pp. 355-373, doi: https://doi.org/10.3402/edui.v4i2.22078 (accessed 4 June 2023).

Mason, H. and Robinson, L. (2011), "The information-related behaviour of emerging artists and designers: Inspiration and guidance for new practitioners", *Journal of documentation*, Vol. 67 No. 1, pp. 159-180, doi: https://doi.org/10.1108/00220411111105498 (accessed 12 May 2023).

Münster, S., Kamposiori, C., Friedrichs, K. and Kröber, C. (2018), "Image libraries and their scholarly use in the field of art and architectural history" *International journal on digital libraries*, Vol.19 No. 4, pp. 367-383, available at: https://link.springer.com/article/10.1007/s00799-018-0250-1 (accessed 12 May 2023).

Ngan, M-Y., & Lee, C. K. J. & Koo, R. D. (2003), "Voices and Implementation Technology in an Elementary School Classroom: A Hong Kong Case Study". *Children Education,* Vol. 79 No. 5, pp. 268–275, doi: https://doi.org/10.1080/00094056.2003.10521211 (accessed 14 January 2024).

Nicholas, D., Williams, P., Rowlands, I. and Jamali, H. R. (2010), "Researchers'e-journal use and information seeking behaviour", Journal of Information Science, Vol. 36 No. 4, pp. 494-516, doi: https://doi.org/10.1177/0165551510371883 (accessed 12 May 2023).

Piaget, J. (1968). *Six Psychological Studies*. Anita Tenzer (Trans.), New York: Vintage Books.

Robinson, S. M. (2014), "From hieroglyphs to hashtags: The information-seeking behaviors of contemporary Egyptian artists", *Art Documentation: Journal of the Art Libraries Society of North America*, Vol. 33 No.1, pp.107-118, doi:

https://www.journals.uchicago.edu/doi/abs/10.1086/675710 (accessed 12 May 2023).

Roland, C. (2010), "Preparing art teachers to teach in a new digital landscape". *Art Education,* Vol. 63 No 1, pp. 17-24, doi: https://doi.org/10.1080/00043125.2010.11519049 (accessed 14 January 2024).

Sang, A. N. H. (2009). The Creation of the 'Hong Kong Visual art Education Web'and the Use of the Inquiry-Based Teaching Approach. *International Journal of Art & Design Education,* Vol. 28 No. 2, pp. 215-224, doi: https://doi.org/10.1111/j.1476-8070.2009.01608.x (accessed 4 June 2023).

Savolainen, R. (1995). Everyday life information seeking: Approaching information seeking in the context of "way of life". *Library & information science research,* Vol.17 No.3, pp. 259-294, doi: https://doi.org/10.1016/0740-8188(95)90048-9 accessed 12 May 2023).

Schrum, L., & Levin, B. B. (2009). *Leading 21st-century schools: Harnessing technology for engagement and achievement.* Corwin Press, (accessed 14 January 2024).

Stam, D. C. (1995), "Artists and art libraries", *Art libraries journal*, Vol. 20 No. 2, pp. 21-24, doi: https://doi.org/10.1017/S0307472200009329 (accessed 12 May 2023).

Swartz, R., Costa A., Beyer, B., Reagan R., Kallick B. (2008). *Thinking Based Learning: Activating Students' Potential,* Cristopher-Gordon Publishers, USA.

Tillander, M. (2011), "Creativity, technology, art, and pedagogical practices". *Art Education,* Vol. 64 No 1, pp. 40-46, doi: https://doi.org/10.1080/00043125.2011.11519110, (accessed 14 January 2024).

Treat, L. and Judkins, J. (2018), "First there is the creative decision, then there is the dollar decision: Information-Seeking Behaviors of Filmmakers Using Moving Image Archives", *The American Archivist*, Vol. 81 No. 2, pp. 373-393, doi: https://doi.org/10.17723/0360-9081-81.2.373 (accessed 12 May 2023).

Uçak, N. Ö. (2011), "Information use in art: A citation analysis of sources used in art theses in Turkey", *The Journal of Academic Librarianship*, Vol.1 No 37, pp. 77-81, doi: 10.1016/j.acalib.2010.10.010 (accessed 12 May 2023).

Vakkari, P. (1997). "Information seeking in context: a challenging metatheory". In P. Vakkari, Savolainen, R. & Dervin, B. (Eds.), *Information seeking in context: proceedings of an international conference on research in information needs, seeking and use in different contexts* (pp. 451-464). London: Taylor Graham.

Vygotsky, L. (1978). *Mind in society*. Harvard University Press, MA.

Wilson, T. D. (1981), "On user studies and information needs", *Journal of documentation*, Vol. 37 No.1, pp. 3-15, doi: https://doi.org/10.1108/eb026702

Wilson, T. D. (1999), "Models in information behaviour research", *Journal of documentation,* Vol. 55 No. 3, pp. 249-270, doi: https://doi.org/10.1108/EUM0000000007145 (accessed 12 May 2023).

Wilson, T. D. (2020). *Exploring Information Behaviour. An Introduction*. Preliminary edition. TD Wilson, Sheffield.

Wilson, T. D. (2006), "A Re-Examination of Information Seeking Behaviour in the Context of Activity Theory", *Information research: an international electronic journal*, Vol.11 No. 4, available at: https://eric.ed.gov/?id=EJ1104634 (accessed 12 May 2023).

Wright, P. (2016), "Seeing is believing. Or is it?: visual literacy in art & design education", *Art Libraries Journal,* Vol. 41 No.1, pp. 32-39, doi: https://doi.org/10.1017/alj.2015.6 (accessed 12 May 2023).

Xie, H. I. (2008), "Users' evaluation of digital libraries (DLs): Their uses, their criteria, and their assessment", *Information processing & management*, Vol. 44 No. 3, pp. 1346-1373, doi: https://doi.org/10.1016/j.ipm.2007.10.003 (accessed 12 May 2023).

Journal of Documentation

Zhao, P., Kynäshlahti, H., & Sintonen, S. (2018). A qualitative analysis of the digital literacy of arts education teachers in Chinese junior high and high schools. Journal of Librarianship and Information Science, Vol. 50 No. 1, pp. 77-87, doi: https://doi.org/10.1177/09610006166583 (accessed 4 June 2023).

Zreik, N. K., Ihadjadene, M. and Rivière, A. L. (2021), "The Information Needs and Sources of Arab Visual Artists", *Art Documentation: Journal of the Art Libraries Society of North America*, Vol. 40 No. 1, pp. 104-122, doi: https://www.journals.uchicago.edu/doi/abs/10.1086/714661 (accessed 12 May 2023).

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Figure 1. Adoption of Wilson's (Wilson, 1981) macro-model of information-seeking behaviour for Visual Arts Teachers

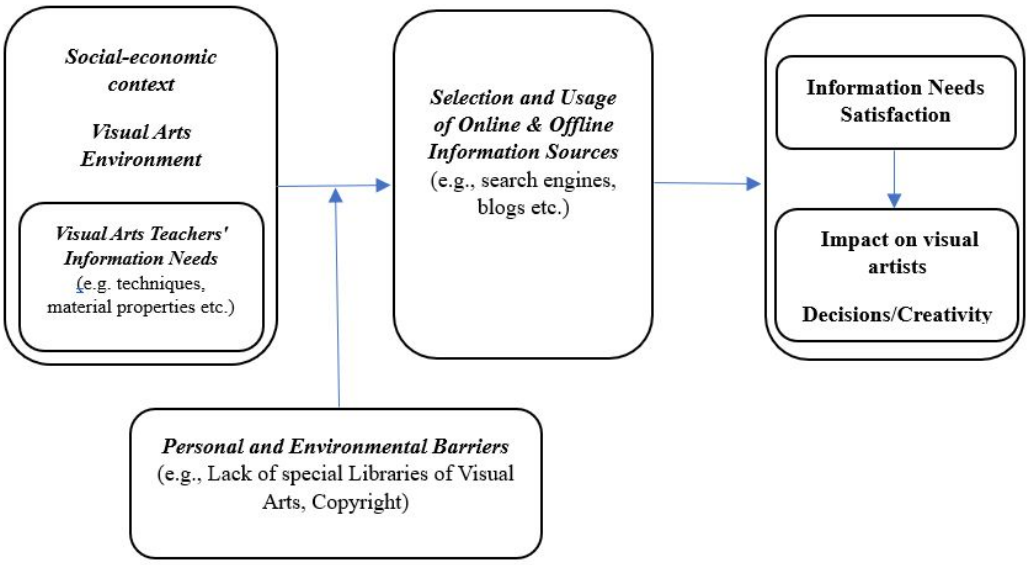

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Table 1. Questionnaire dimensions based on the Wilson model adaptation for visual arts teachers' information seeking.

Questioner dimensions	Definition/measurement items
Information needs on the creativity of visual arts teachers (Items *N = 12*)	Measures the frequency of specific information needs for artistic creativity related to job search, professional development, recent visual arts publications, photos, techniques of creating artwork, materials properties, digital visual editing software (e.g., Illustrator, Photoshop, etc.), current art exhibitions, grants, scholarships, conventional methods of promoting artwork, digital methods of promoting artistic work.
Sources of information used by visual arts teachers. (Items N = *27*)	Measures the frequency with which teachers use specific sources when seeking information in the process of creating visual artwork as well as their teaching work: Public libraries, National Library, Special libraries (e.g., academic libraries, etc.), personal libraries, personal digital libraries, museums, galleries, magazines, art magazines, digital art magazines, art catalogues, technical manuals, art gallery websites, private collections, conferences, scientific databases, workshops, professional organisations, virtual art communities, search engines (e.g., Google), colleagues visual artists, YouTube, Facebook, Twitter, LinkedIn, Instagram,
Obstacles when visual arts teachers seeking information (Items *N = 9*)	Measures the importance of the obstacles that art teachers face when searching for information: lack of availability of reliable sources of information copyright, cost of access to resources, lack of time, lack of specialized visual arts libraries, lack of familiarity with the search for information, lack of familiarity with the use of digital indexes/database, lack of trust in digital visual information.
Impact of information needs satisfaction on visual art teachers' creativity (Items *N =12*)	Measures the impact of information needs satisfaction on individual forms (aspects) of visual creativity: Painting, sculpture, engraving, visual education, photo, digital art, scenography, Byzantine painting, mosaic, ceramics, decoration, Art history (research-analysis).

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Table 2. Demographic Characteristics of Visual Arts Teachers

Demographic characteristics	Frequency	(Valid Percent)
Sex		
Males	86	28.9%
Females	212	71.1%
Birth year		
1946-1964 (Baby Boomers)	24	8.1%
1965-1980 (Generation X)	185	62.1%
1981-1996 (Millennials-Generation Y)	89	29.9%
Marital status		
I live with my parents or a roommate	21	7.0%
Unmarried/I am single	71	23.8%
Divorced or separated	36	12.1%
Married, cohabiting, civil partnership	170	57.0%
Higher level of visual arts education		
Master's/Doctoral degree	94	31.5%
University degree	204	68.5%
Employment status as a visual artist (in terms of their participation in the production of visual artworks)		
Amateur	76	25.5%
Semi-professional	131	44.0%
Professional	91	30.5%
Total years of employment (working) as a visual artist		
Until 4	37	12.4%
5-10	81	27.2%
11-20	109	36.6%
21-50	71	23.8%

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Table 3. Satisfaction with the overall current information of visual art teachers on creative activity

	Measurement scale (1 "Not at all", 2 "A little", 3 "Quite a bit", 4 "A lot", 5 "Very much"					
	1	2	3	4	5	Median
Satisfaction with the overall current information of visual art teachers on creative activity (Valid $N = 298$)	19 (6.4%)	119 (39.9%)	129 (43.3%)	27 (9.1%)	4 (1.3%)	3.00

Note(s): Mann–Whitney U test and Kruskal–Wallis H-test showed that there are no significant differences in terms of overall satisfaction

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Table 4. EFA results for the information needs of visual arts teachers.

Information needs	Factors	
	Professional development	*Technics and Material*
Finding a job	0.913	
Scholarships	0.897	
Conventional methods of promotion/presentation of artwork	0.825	
Current art exhibitions	0.689	
Digital methods of promoting visual artwork	0.663	
Recent visual arts exhibitions	0.605	
Professional development	0.543	
Finding a job related to the visual arts	0.509	
Digital image processing software	0.501	
Techniques of creating visual artwork		0.891
Materials-qualities of creation materials		0.863
Photographic material		0.729
Cronbach's alpha	0.911	0.845
Mean value	2.97	3.33
Standard dev	0.947	0.942

Note(s): Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 2 iterations

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Table 5. EFA results for the sources of information utilized by visual arts teachers.

	Factors						
Information Resources	1	2	3	4	5	6	7
Websites	0.748						
Digital art magazines	0.731						
Blogs	0.638						
Technical manuals	0.586						
Catalogues	0.518						
Art galleries		0.833					
Museums		0.739					
Journals		0.605					
Private collections		0.595					
Art magazines		0.574					
Professional organisations			0.760				
Seminars/ workshops			0.729				
Conferences			0.718				
Databases			0.565				
Communities			0.551				
Libraries				0.803			
National Library				0.796			
Special Libraries				0.717			
YouTube					0.809		
Facebook					0.666		
Google					0.664		
Instagram					0.599		
LinkedIn						0.833	
Twitter						0.821	
Personal library							0.720
Personal digital library							0.704
Colleagues							0.409
Cronbach's alpha	0.843	0.874	0.875	0.838	0.694	0.828	0.714
Mean value	3.12	3.21	2.45	2.20	3.35	1.72	3.65
Standard dev	0.94	0.92	1.00	0.98	0.92	0.99	0.86

Note(s): (1) Digital art sites, (2) Conventional sources (galleries, museums), (3) Professional scholar sources, (4) Libraries, (5) Informal information online, (6) Professional scholar's social networks, (7) Personal collections-colleagues.
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 7 iterations

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Table 6. EFA results for the obstacles visual arts teachers face when seeking information.

Obstacles during information search	Environment	Personal-Information Literacy skills
Copyright	0.813	
Cost	0.790	
lack of availability of reliable sources	0.754	
lack of specialised libraries	0.685	
Lack of time	0.482	
lack of familiarization with the use of digital indexes/database		0.876
lack of familiarization in the search for visual information		0.874
lack of trust in digital visual information		0.701
language restrictions		0.610
Cronbach's alpha	0.772	0.790
Mean value	2.59	1.87
Standard dev	0.77	0.78

Note(s): Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 2 iterations

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Table 7. EFA results for the impact of information needs satisfaction on the individual forms/fields of visual creativity.

The impact of information needs satisfaction on the individual forms/fields of visual creativity	Fine Arts	Applied Arts
Painting	0.810	
Photo	0.750	
Visual Education	0.746	
Sculpture	0.738	
Digital art	0.725	
Engraving	0.724	
History of art (research-analysis)	0.667	
Mosaic		0.883
Hagiography		0.883
Ceramics		0.757
Scenography		0.699
Decoration		0.642
Cronbach's alpha	0.884	0.900
Mean value	3.62	3.00
Standard dev	0.85	1.10

Note(s): Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 2 iterations

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Table 8. Bivariate correlations of the survey factors

Factors/ Variables	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
1	1.00												
2	0.602**	1.00											
3	0.431**	0.387**	1.00										
4	0.454**	0.324**	0.681**	1.00									
5	0.421**	0.268**	0.595**	0.600**	1.00								
6	0.392**	0.291**	0.464**	0.536**	0.552**	1.00							
7	0.194**	0.244**	0.361**	0.332**	0.379**	0.158**	1.00						
8	0.267**	0.175**	0.402**	0.314**	0.474**	0.343**	0.287**	1.00					
9	0.435**	0.459**	0.628**	0.546**	0.379**	0.316**	0.434**	0.220**	1.00				
10	0.276**	0.228**	0.291**	0.196**	0.317**	0.224**	0.221**	0.153**	0.306**	1.00			
11	0.003	0.018	-.087	-.026	0.087	0.061	-.014	0.017	-.056	0.305**	1.00		
12	0.094	0.076	0.083	0.057	0.073	0.123	0.114	-.070	0.049	-.005	.010	1.00	
13	0.197**	0.170**	0.223**	0.083	0.105	0.088	0.152**	-.052	0.253**	0.140*	.090	0.698**	1.00

Note(s): 1. Mean 2.97, std deviation 0.947; **2.** M 3.33, std 0.942; **3.** M 3.12, std 0.94; **4.** M 3.21, std 0.92; **5.** M 2.45, std 1.00; **6.** M 2.20, std 0.98; **7.** M 3.35, std 0.92; **8.** M 1.72, std 0.99; **9**. M 3.65, std 0.86; **10.** M 2.59, std 0.77; **11.** M 1.87, std 0.78; **12.** M 3.62, std 0.68**; 13. M** 3.00, std 1.00

*$p < 0.05$ and **p < 0.001, 1. Professional development; 2. Technics & materials; 3. Digital art sites; 4. Conventional sources (galleries, museums); 5. Professional scholar sources, 6. Libraries; 7. Informal information online; 8. Professional scholar's social networks; 9. Personal collections/colleagues; 10. Environment barriers; 11. Literacy skills; 12. Fine arts; 13. Applied arts

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Appendix

Table A1. Frequency of information needs of visual art teachers.

	Measurement scale (1 "Not at all", 2 "A little", 3 "quite a bit", 4 "A lot", 5 "very much")					
	1	2	3	4	5	Median
1.1. Find a job related to the visual arts[τ] (valid *N* = 298)	20 (6.7%)	70 (23.5%)	100 (33.6%)	60 (20.1%)	48 (16.1%)	3.00
1.2. Professional development[σ] (valid *N* = 298)	6 (2.0%)	78 (26.2%)	92 (30.9%)	77 (25.8%)	45 (15.1%)	3.00
1.3. Recent visual arts publications (valid *N* = 298)	45 (15.1%)	61 (20.5%)	94 (37.3%)	67 (22.5%)	31 (10.4%)	3.00
1.4. Photographic material (valid *N* = 298)	13 (4.4%)	38 (12.8%)	94 (31.5%)	98 (32.9%)	55 (18.5%)	4.00
1.5. Techniques of creating visual artwork[χ] (valid *N* = 298)	15 (5.0%)	37 (12.4%)	104 (34.9%)	82 (27.5%)	60 (20.1%)	3.00
1.6. Materials - material properties (valid *N* = 298)	14 (4.7%)	33 (11.1%)	101 (33.9%)	91 (30.5%)	59 (19.8%)	4.00
1.7. Digital visual editing software [τ,ε] (valid *N* = 298)	39 (13.1%)	78 (26.2%)	69 (23.2%)	63 (21.1%)	49 (16.4%)	3.00
1.8. Current art exhibitions [τ,ε] (valid *N* = 298)	20 (6.7%)	51 (17.1%)	94 (31.5%)	87 (29.2%)	46 (15.4%)	3.00
1.9. Grants, funding opportunities for visual arts projects [τ,ε] (valid *N* = 298)	89 (29.9%)	71 (23.8%)	41 (13.8%)	45 (15.1%)	52 (17.4%)	2.00
1.10. Scholarships [τ,ε] (e.g., I.K.Y.) (valid *N* = 298)	105 (35.2%)	63 (21.1%)	43 (14.4%)	43 (14.4%)	44 (14.8%)	2.00
1.11. Conventional methods of ways of promoting/presenting artwork (valid *N* = 298)	33 (11.1%)	80 (26.8%)	89 (29.9%)	59 (19.4%)	37 (12.4%)	3.00
1.12. Digital methods of ways to promote/present a visual artwork [σ] (valid *N* = 298)	21 (7.0%)	55 (18.5%)	84 (28.2%)	86 (28.9%)	52 (17.4%)	3.00

Note(s): Mann–Whitney U test and Kruskal–Wallis H-test (τ: $p < 0.05$ total years of employment/working as a visual artist; σ: $p < 0.05$ Higher level of visual arts education; ε: $p < 0.05$employmentt status as a visual artist

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Table A2. Information resources frequency of use by visual art teachers.

	Measurement scale (1 "Not at all", 2 "A little", 3 "quite a bit", 4 "A lot", 5 "very much")					
	1	2	3	4	5	Median
2.1. Public/Municipal Libraries [ε] (valid *N* = 298)	95 (31.9%)	105 (32.2%)	60 (20.1%)	26 (8.7%)	12 (4.0%)	2.00
2.2. National Library [ε] (valid *N* = 298)	122 (40.0%)	98 (32.9%)	45 (15.1%)	26 (8.7%)	7 (2.3%)	2.00
2.3. Special Art Libraries [τ,ε] (valid *N* = 298)	41 (13.8)	86 (28.9%)	94 (31.5%)	49 (16.4%)	28 (9.4%)	3.00
2.4. Personal library/print collection (valid *N* = 298)	4 (1.3%)	31 (10.4%)	96 (32.2%)	95 (31.9%)	72 (24.2%)	4.00
2.5. Personal digital library (valid *N* = 298)	7 (2.3%)	28 (9.4%)	86 (28.9%)	89 (29.9%)	88 (29.5%)	4.00
2.6. Visit to Museums [ε] (valid *N* = 298)	3 (1.0%)	26 (8.7%)	100 (33.6%)	83 (27.9%)	86 (28.9%)	4.00
2.7. Visit to conventional art galleries - Exhibitions at local or national level [φ,τ,ε] (valid *N* = 298)	4 (1.3%)	47 (15.8%)	93 (31.2%)	85 (28.5%)	69 (23.2%)	4.00
2.8. Magazines, Newspapers, General content (valid *N* = 298)	37 (12.4%)	83 (27.9%)	94 (31.5%)	63 (21.1%)	21 (7.0%)	3.00
2.9. Printed art magazines [ε] (valid *N* = 298)	35 (11.7%)	85 (28.5%)	82 (27.5%)	63 (21.1%)	33 (11.1%)	3.00
2.10. Digital art magazines [φ,η,ε] (valid *N* = 298)	31 (10.4%)	52 (17.4%)	76 (25.5%)	88 (29.5%)	51 (17.1%)	3.00
2.11. Art catalogues [η,ε] (valid *N* = 298)	32 (10.7%)	70 (23.5%)	97 (32.6%)	66 (22.1%)	33 (11.1%)	3.00
2.12. Technical manuals (materials, studio practices, etc.) (valid *N* = 298)	42 (14.1%)	85 (28.5%)	98 (32.9%)	48 (16.1%)	25 (8.4%)	3.00
2.13. Art gallery websites (valid *N* = 298)	25 (8.4%)	40 (13.4%)	93 (31.2%)	97 (32.6%)	43 (14.4%)	3.00
2.14. Visual Arts Blogs (valid *N* = 298)	15 (5.0%)	37 (12.4%)	88 (29.5%)	102 (34.2%)	56 (18.8%)	4.00
2.15. Visit to private art collections (valid *N* = 298)	29 (9.7%)	85 (28.5%)	90 (30.2%)	71 (23.8%)	23 (7.7%)	3.00
2.16. Scientific Conferences of Visual Arts [ε] (valid *N* = 298)	52 (17.4%)	97 (32.6%)	84 (28.2%)	42 (14.1%)	23 (7.7%)	2.50
2.17. Scientific databases (valid *N* = 298)	63 (21.1%)	96 (32.2%)	67 (22.5%)	57 (19.1%)	15 (5.0%)	2.00
2.18. Seminars/Courses in Visual Arts [φ,ε] (valid *N* = 298)	47 (15.8%)	84 (28.2%)	82 (27.5%)	51 (17.1%)	34 (11.4%)	3.00
2.19. Professional associations (e.g., Artistic Associations, Chamber of Fine Arts, etc.) [φ,ε] (valid *N* = 298)	46 (15.4%)	88 (29.5%)	88 (29.5%)	48 (16.1%)	28 (9.4%)	3.00
2.20. Virtual art communities [τ,ε] (valid *N* = 298)	118 (39.6%)	82 (27.5%)	55 (18.5%)	33 (11.1%)	10 (3.4%)	2.00
2.21. Search Engines (e.g., Google, etc.) (valid *N* = 298)	1 (0.3%)	15 (5.0%)	75 (25.2%)	101 (33.9%)	106 (35.6%)	4.00
2.22. Colleagues visual artists (valid *N* = 298)	2 (0.7%)	28 (9.4%)	93 (31.2%)	103 (34.6%)	72 (24.2%)	4.00
2.23. YouTube	22 (7.4%)	54 (18.1%)	93 (31.2%)	66 (22.1%)	63 (21.1%)	3.00
2.24. Facebook (valid *N* = 298)	20 (6.7%)	50 (16.8%)	84 (28.2%)	81 (27.2%)	63 (21.1%)	3.00
2.25. Twitter [τ,ε] (valid *N* = 298)	179 (60.1%)	62 (20.8%)	31 (10.4%)	20 (6.7%)	6 (2.0%)	1.00
2.26. LinkedIn [τ,ε] (valid *N* = 298)	160 (53.7%)	68 (22.8%)	40 (13.4%)	23 (7.7%)	7 (2.3%)	1.00
2.27. Instagram [η,τ] (valid *N* = 298)	75 (25.2%)	54 (18.1%)	62 (20.8%)	59 (19.8%)	48 (16.1%)	3.00

Note(s): Mann–Whitney U test and Kruskal–Wallis H-test (φ: $p < 0.05$ sex φ; η: $p < 0.05$ birth year.; t2.3: $p < 0.05$ total years of employment/working as a visual artist; ε: $p < 0.05$ employment status as a visual artist.

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Table A3. Importance of information seeking obstacles when seeking visual art information

	Measurement scale (1 "Not at all", 2 "A little", 3 "quite a bit", 4 "A lot", 5 "Very much")					
	1	2	3	4	5	Median
3.1. Lack of availability of valid sources of visual information[ε] (valid *N* = 298)	29 (9.7%)	121 (40.6%)	96 (32.2%)	36 (12.1%)	16 (5.4%)	2.00
3.2. Copyright[η] (valid *N* = 298)	40 (13.4%)	102 (34.2%)	93 (31.2%)	46 (15.4%)	17 (5.7%)	3.00
3.3. Cost of access to sources- or retrieval[η, τ] (valid *N* = 298)	54 (18.1%)	100 (33.6%)	78 (26.2%)	44 (14.8%)	22 (7.4%)	2.00
3.4. Lack of time[φ] (valid *N* = 298)	22 (7.4%)	84 (28.2%)	118 (39.6%)	43 (14.4%)	31 (10.4%)	3.00
3.5. Lack of Special Libraries of Visual Arts[η] (valid *N* = 298)	30 (10.1%)	73 (24.5%)	94 (31.5%)	66 (22.1%)	35 (11.7%)	3.00
3.6. Language restrictions (e.g., knowledge of English)[τ.] (valid *N* = 298)	119 (39.9%)	98 (32.9%)	54 (18.1%)	18 (6.0%)	9 (3.0%)	2.00
3.7. Lack of familiarity with the search for visual information (valid *N* = 298)	146 (49.0%)	94 (31.5%)	38 (12.8%)	14 (4.7%)	6 (2.0%)	2.00
3.8. Lack of familiarity with the use of digital indexes/database (valid *N* = 298)	134 (45.0%)	77 (25.8%)	66 (21.8%)	15 (5.0%)	7 (2.3%)	2.00
3.9. Lack of trust in digital visual information (valid *N* = 298)	127 (42.6%)	104 (34.9%)	45 (15.1%)	14 (4.7%)	8 (2.7%)	2.00

Note(s): Mann–Whitney U test and Kruskal–Wallis H-test (φ: $p < 0.05$sex; η: $p < 0.05$birt year; τ: $p < 0.05$ total years of employment/working as a visual artist; ε: $p < 0.01$ employment status as a visual artist.)

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Table A4. Importance of impact of information needs satisfaction on their creativity in distinct areas of visual arts.

	Measurement scale (1 "Not at all", 2 "A little", 3 "quite a bit", 4 "A lot", 5 "very much")					
	1	2	3	4	5	Median
4.1 Painting (Valid *N* =285)	4 (1.3%)	21 (7%)	97 (32.6%)	81 (27.2%)	82 (27.5%)	4.00
4.2. Sculpture (Valid *N* =229)	12 (4.0%)	35 (11.7%)	73 (24.5%)	59 (19.8%)	50 (16.8%)	3.00
4.3. Engraving [τ] (Valid *N* =217)	16 (5.4%)	47 (15.8%)	67 (22.5%)	46 (15.4%)	41 (13.8%)	3.00
4.4. Visual Education (Valid *N* =174)	5 (1.7%)	17 (5.7%)	86 (28.9%)	92 (30.9%)	74 (24.8%)	4.00
4.5. Photo (Valid *N* =218)	6 (2.0%)	24 (8.1%)	77 (25.8%)	67 (22.5%)	44 (14.8%)	4.00
4.6. Digital art (video art, animation, cinema, etc.) (valid *N* =227)	9 (3.0%)	24 (8.1%)	53 (17.8%)	66 (22.1%)	75 (25.2%)	4.00
4.7. Scenography (Valid *N* =207)	33 (11.1%)	35 (11.7%)	61 (20.5%)	51 (17.1%)	27 (9.1%)	3.00
4.8. Hagiography (Valid *N* =196)	50 (16.8%)	49 (16.4%)	46 (15.4%)	34 (11.4%)	17 (5.7%)	2.00
4.9. Mosaic (Valid *N* =195)	51 (17.1%)	40 (13.4%)	52 (17.4%)	34 (11.4%)	18 (6.0%)	3.00
4.10 Ceramics [τ, σ] (Valid *N* =201)	30 (10.1%)	40 (13.4%)	63 (21.1%)	40 (13.4%)	28 (9.4%)	3.00
4.11 Decoration (Valid *N* =198)	21 (7.0%)	32 (10.7%)	56 (18.8%)	54 (18.1%)	35 (11.7%)	3.00
4.12. History of Art (Valid *N* =229)	8 (2.7%)	25 (8.4%)	57 (19.1%)	73 (24.5%)	66 (22.1%)	4.00

Note(s): Mann–Whitney U test and Kruskal–Wallis H-test (τ: $p < 0.05$ total years of employment/working as a visual artist; σ: $p < 0.05$ Higher level of visual arts education

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